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EXAMINER	
BELLO, AGUSTIN	

ART UNIT	PAPER NUMBER
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/604,182	KILLINGER, DENNIS K.	
	Examiner	Art Unit	
	Agustin Bello	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 03 February 2009.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,6,12-27,30-33 and 36 is/are pending in the application.

4a) Of the above claim(s) 12-17 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,6,18-27,30-33 and 36 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/03/09 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 6, 18-27, 30-33, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rees (Patent No. US 6,034,760 A).

Regarding claim 1, Rees teaches at least one laser (reference numeral 12 in Figure 3) adapted to generate coherent light simultaneously at multiple wavelengths (i.e. 16a, 34a, 16b, 34b, 16c, 36c in Figure 3); said receiver including at least one detector (reference numeral 87, 96, 98, 100 in Figure 3) adapted to detect said coherent light at multiple wavelengths; said at least one laser and said at least one detector being positioned in out of line-of-sight relation to one another (as seen in Figure 3 where receiver 87 lies on a different plane that laser 12), said at least one laser positioned at a first fixed position (i.e. fixed within the apparatus seen in Figure 3), a barrier (reference numeral 70, 80, 82, 86 in Figure 3) between said at least one laser and

said at least one detector, said barrier causing said at least one laser and said at least detector to be in said out of line-of-sight relation to one another (as seen in Figure 3 where receiver 87 lies on a different plane that laser 12), a plurality of external remote targets and target spatial regions fixed in line-of- sight relation to said at least one laser and in line-of-sight relation to said detector (as seen in Figure 1); said plurality of external remote targets and target spatial regions being disposed at a second fixed position remote from said first fixed position (i.e. the targets are remotely located in a second fixed position relative to the first position at an instant in time), said external remote targets and target spatial regions including trees, buildings, clouds, atmospheric aerosols, and like objects that are out-of-doors relative to said at least one laser (as seen in Figure 1); a modulating device (reference numeral 24 in Figure 3) connected in modulating relation to said at least one laser; said modulating device adapted to modulate each of said multiple wavelengths (i.e. 16a, 16b, 16c in Figure 3) so that multiple messages are transmitted simultaneously; said communication device adapted to aim said modulated light from said at least one laser at said plurality of external remote targets and target spatial regions to separate spatially different communication optical signals from one another (reference numeral 16 in Figure 1); said at least one detector adapted to demodulate light scattered by said target (reference numeral 96 in Figure 3); said at least one detector being disposed at a third fixed position (i.e. detector being fixed within apparatus as seen in Figure 3) remote form said second fixed position in said line-of-sight relation to said external remote targets and said target spatial regions (as seen in Figure 1), said at least one detector including an optical bandpass filter (reference numeral 91 in Figure 3) adapted to pass preselected wavelengths of light and reject wavelengths of light outside of said preselected wavelengths; whereby multiple messages are

simultaneously transmitted along multiple wavelengths (16b, 16c in Figure 3); and whereby said multiple messages are individually detected by said at least one detector (reference numeral 87 in Figure 3), and whereby at least one laser beam follows a generally "V"-shaped path of travel between said at least one laser and said at least one detector (as noted in Figure 3 by the outgoing beam 34a and returning beam 76). Rees differs from the claimed invention in that Rees fails to specifically teach that the multiple wavelengths used are at different frequencies. However, the use of multiple wavelengths at different frequencies is well known in the art and Official Notice is given to that effect. Furthermore, as admitted by applicant ("Remarks" pages 10 and 11 filed 05/28/08), lasers that are adapted to generate coherent light simultaneously at multiple wavelengths and different frequencies are well known in the art and have been for nearly fifty years. One skilled in the art would have been motivated to employ such a laser in the apparatus of Rees in order to allow for a greater amount of information to be obtained from the return signal such as directional information. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ a well-known laser that generates coherent light simultaneously at multiple wavelengths and different frequencies in Rees.

Regarding claim 6, Rees teaches a first data communication device (reference numeral 12, 24, 38 in Figure 3) adapted to transmit multiple sets of data through multiple wavelengths (i.e. 16a, 16b, 16c in Figure 3), there being as many wavelengths as there are sets of data (i.e. each wavelength carriers a data set); said first data communication device being disposed in a first fixed position (i.e. laser and subcomponents fixed within the apparatus seen in Figure 3), a laser source (reference numeral 12 in Figure 3) modulated by said first data communication device; a transmitter telescope (reference numeral 74 in Figure 3) adapted to aim modulated light

of said multiple wavelengths from said laser source to a plurality of light-reflecting multiple external remote targets (reference numeral 16 in Figure 1); said plurality of light-reflecting multiple external remote targets being disposed in a second fixed position remote from said first fixed position in line-of-sight relation to said first fixed position (as seen in Figure 1), said plurality of light-reflecting multiple external remote targets including trees, buildings, clouds, atmospheric aerosols, and like objects that are out-of-doors relative to said first data communication device (i.e. all of the out-of-doors elements seen in Figure 1); a second data communication device (reference numeral 87. 96, 98, 100, 104, 108, 112 in Figure 3) adapted to receive multiple sets of data carried by said multiple wavelengths (i.e. 16a, 16b, 16c in Figure 3); said second data communications device being disposed in a third fixed position (i.e. within apparatus of Figure 3) remote from said second fixed position in line-of-sight relation to said second fixed position, said first and second data communication devices not being positioned in line-of-sight relation to one another (as seen in Figure 3 where receiver 87 lies on a different plane that laser 12), an optical detector (reference numeral 92 in Figure 3) connected in driving relation to said second data communication device, said optical detector adapted to generate electrical signals corresponding to detected optical signals; a receiving telescope (reference numeral 74 in Figure 3) aimed at said plurality of light-reflecting external remote targets and adapted to collect modulated light reflected from said plurality of light-reflecting external remote targets at said multiple wavelengths and to deliver said modulated light to said optical detector; an optical bandpass filter (reference numeral 91 in Figure 3) connected between said receiving telescope and said optical detector; a barrier means (reference numeral 70 in Figure 3) adapted to be positioned between said first and second data communication devices, said barrier means

preventing line-of-sight communication between said respective first and third positions of said first and second data communication devices; said communication device being adapted to aim said modulated light from said laser at said plurality of external remote targets at said second fixed position to separate spatially different communication optical signals from one another (reference numeral 16 in Figure 1); said transmitter telescope causing modulated light at multiple wavelengths to reflect from said plurality of light-reflecting different multiple external remote targets (reference numeral 16 in Figure 1); said receiver telescope (reference numeral 74 in Figure 3) causing reflected light at said multiple wavelengths to focus on said optical detector; said second data communication device receiving electrical signals from said first data communication device (i.e. after reflection by atmosphere and conversion by converter 92 in Figure 3); said optical bandpass filter (i.e. filter 91 for each of the wavelengths 16a-16c in Figure 3) passing each of said multiple wavelengths to said optical detector so that multiple messages are sent simultaneously from said first data communications device to said second data communications device, whereby at least one laser beam follows a "V" shaped path of travel between said first and second data communication devices (as noted in Figure 3 by the outgoing beam 34a and returning beam 76).

Regarding claim 18, Rees teaches a communication device adapted to reflect signals from remote targets positioned in an environment external to the environment of the communication device, comprising: a first data communication device adapted to transmit data (i.e. laser within reference numeral 140 in Figure 6a and shown in Figure 3); said first data communication device disposed at a first fixed position, said remote targets including trees, buildings, clouds, atmospheric aerosols (reference numeral 150 in Figure 6), and like substantially stationary

objects in said environment external to the environment of the communication device; said remote targets disposed at a second fixed position remote from said first fixed position in line-of-sight relation to said first fixed position (i.e. between elements 140,142, 152, 154 in Figure 6), a laser source (reference numeral 140 in Figure 6) modulated by said first data communication device (i.e. as noted above and shown in Figure 3); a transmitter telescope (reference numeral 140 in Figure 6 and shown in Figure 3) adapted to aim modulated light from said laser source to a remote target (i.e. reference numeral 150 between elements 140 and 142 in Figure 6) positioned in said environment external to the environment of said communication device; a second data communication device (reference numeral 156, 158 in Figure 6; also the photodetector that is part of the transceiver 140 in Figure 6 and shown in Figure 3) adapted to receive data; said second data communication device disposed at a third fixed position remote from said first and second fixed positions (i.e. 156 and 158 are remote from 140, while the detector within transceiver 140 is also remote from the laser of the transceiver as shown in Figure 3) in line-of-sight relation to said second fixed position (as seen in Figure 6), said first and second data communication devices being positioned in out of line-of-sight relation to one another (as seen in Figure 6 and Figure 3); an optical detector (i.e. photodetector 156, 158 in Figure 6, the optical detector within element 140 in Figure 6 and shown in Figure 3) connected in driving relation to said second data communication device, said optical detector (i.e. photodetector 156, 158 in Figure 6, the optical detector within element 140 in Figure 6 and shown in Figure 3) adapted to generate electrical signals corresponding to detected optical signals; a receiving telescope (reference numeral 140 in Figure 6 and inherent part of detectors 156, 158 in Figure 6) adapted to collect modulated light reflected from said remote target and to

deliver said modulated light to said optical detector; said receiving telescope disposed at said third fixed position (i.e. at least in the case of detectors 156, 158), a barrier means adapted to be positioned between said first and second data communication devices (i.e. reference numeral 170 in Figure 3; the distance between elements 156, 158, and 140 in Figure 6, the frame members 130 in Figure 6), said barrier means preventing line-of-sight communication between said first and second data communication devices; said first data communication device (i.e. laser within element 140 in Figure 6) being adapted to aim said modulated light from said laser at said remote targets to separate spatially different communication optical signals from one another (i.e. optical signal separated by atmospheric disturbances and detected at different positions); said transmitter telescope (reference numeral 140 in Figure 6) causing modulated light to reflect from said remote targets; said receiving telescope causing reflected light to focus on said optical detector (reference numeral 140 in Figure 6, the inherent telescopes present at the detectors 156, 158); said second data communication device receiving electrical signals from said first data communication device (i.e. via transmission of pulse modulated optical signal which are then converted to electrical signals at the second data communication device), whereby at least one laser beam follows a "V"-shaped path of travel between said first and second data communication devices (i.e. from element 140 via atmospheric particles and retroreflector 152 to elements 156 or 158).

Regarding claim 19, Rees teaches the communication device of claim 18, further comprising an optical bandpass filter (reference numeral 91 in Figure 3) connected between said receiving telescope and said optical detector.

Regarding claim 20, Rees teaches a laser (reference numeral 12 in Figure 3) adapted to generate a LIDAR beam (i.e. a laser beam); a data transmitting device (reference numeral 24 in Figure 3) for modulating said laser; said data transmitting device disposed at a first fixed position, a transmit telescope (reference numeral 74 in Figure 3) disposed at said first fixed position adapted to aim said LIDAR beam at a plurality of external remote targets and target spatial regions; said plurality of external remote targets and target spatial regions (reference numeral 16 in Figure 1) being disposed at a second fixed position remote from said first fixed position in line-of-sight relation to said first fixed position, a receiver telescope (reference numeral 74 in Figure 3) adapted to collect said LIDAR beam after said LIDAR beam has reflected from said remote target; an optical detector means (reference numeral 92 in Figure 3) in communication with said receiver telescope, said optical detector means adapted to generate electrical signals upon receiving reflected light from said receiver telescope; a data receiving device (reference numeral 112 in Figure 3) adapted to receive electrical signals from said optical detector; said receive telescope (reference numeral 74 in Figure 3), said detector means (reference numeral 92 in Figure 3), and said data receiving means (reference numeral 112 in Figure 3) being disposed at a third fixed position remote from the second fixed position in line of sight relation to said second fixed position, said data transmitting device and said data receiving device not being positioned in line-of-sight relation to one another (as seen in Figure 3 where receiver 87 lies on a different plane that laser 12), said LIDAR communication system being adapted to aim said modulated light from said LIDAR beam at said plurality of external remote targets and target spatial regions to separate spatially different communication optical signals from one another (reference numeral 16 in Figure 1); said external remote targets and target

spatial regions including trees, buildings, clouds, atmospheric aerosols, and like substantially stationary objects that are out-of-doors relative to said laser (i.e. the environment shown in Figure 1); said data receiving device receiving data from said data transmitting device even when said data receiving device is positioned in a location distant from said data transmitting device (i.e. the receiver receives continually receives the transmitted light signal) and when at least one obstacle prevents line-of-sight communication between said data transmitting device and said data receiving device (i.e. the objects in the environment that reflect the laser beam), whereby said LIDAR beam follows a generally "V" shaped path of travel from said laser to said data receiving device detector (as noted in Figure 3 by the outgoing beam 34a and returning beam 76).

Regarding claim 21, Rees teaches an electrical signal conditioner (reference numeral 26 in Figure 3) disposed in electrical communication between said data transmitting device and said laser, said electrical signal conditioner adapted to condition signals from said data transmitting device.

Regarding claim 22, Rees teaches an electrical signal conditioner (reference numeral 96, 98, 100, 104, 108 in Figure 3) disposed in electrical communication between said optical detector and said data receiving device, said electrical signal conditioner adapted to condition electrical signals from said optical detector.

Regarding claim 23, Rees teaches an optical bandpass filter (reference numeral 91 in Figure 3) between the receiver telescope and said optical detector (reference numeral 92 in Figure 3).

Regarding claims 24 and 26, Rees teaches multiple optical wavelengths (i.e. 16a-16c in Figure 3) for communication of different communication signals simultaneously when the same external remote target is used as a common target for multiple communication devices.

Regarding claims 25 and 27, Rees teaches multiple optical wavelengths (i.e. 16a-16c in Figure 3) for communication of different communication signals simultaneously when the same external remote target is used as a common target for LIDAR communication devices (i.e. a laser).

Regarding claims 30, 31, 32, and 33, Rees teaches an optical signal transmitted to a remote external target (reference numeral 16 in Figure 1) wherein the backscattered optical signal is detected simultaneously by multiple telescope receivers positioned at different locations (i.e. as seen in Figure 2 and 3).

Regarding claim 36, Rees teaches the communication device of claim 1, further comprising: a plurality of external remote targets including atmospheric back scatter in non-line-of- sight relation to said detector (i.e. any of the atmospheric backscatter shown in Figure 1 that are non-line-of sight with detector 10 in Figure 1); said detector adapted to detect multipath backscatter from said multiple backscatter spatial target regions (reference numeral 16 in Figure 1; also 16a, 16b, 16c in Figure 3).

Response to Arguments

4. Applicant's arguments filed 02/03/09 have been fully considered but they are not persuasive.

Applicant first argues that the CCD disclosed by Rees does not perform the function as a telescope. However, at no point does the examiner advocate this concept. Rather, the examiner

has relied on Rees' CCD as showing that multiple telescope receivers are well known in the art, and not multiple telescopes.

Next, applicant argues that claim 20 has been amended to clearly recite that said telescopes are respectively disposed at first and third positions and that said positions are remote from one another and not in line-of-sight relation to one another. Unfortunately, applicant's claim language falls short of claiming as much. At best, applicant's claim language simply requires a transmit telescope at a first position and a receive telescope at a third position, without any clear indication that the first location is distinct from the third location. Furthermore, applicant's addition of other detection elements located at third position lends itself to anticipation/obviation by Rees in that at least some of the claimed elements are located at locations distinct from transmitter elements located at the first position.

As to applicant's argument that atmospheric particles do not represent an obstacle that prevents line of sight communication, the examiner maintains that they can and do act as obstacles that prevent line of sight communication. Take for example fog or rain which, in certain instances, prevents line of sight communication via a laser, especially when the communication elements are separated by a large distance.

Finally, applicant argues that the internal mirror of Rees is not an obstacle as claimed. However, the examiner initially notes that the mirror of Rees is cited as meeting the limitations pertaining to the claimed "barrier." Furthermore, the remote obstacles, although not claimed as such, are clearly met by Rees' disclosure of atmospheric aerosols. As to applicant's argument that the Rees' elements can not be considered remote from one another since they are internal components of the same apparatus fails to appreciate the broadest reasonable interpretation of the

term "remote." In essence, the term "remote" simply requires that some distance separates the elements. There being no claim language further specifying what is meant by the term "remote" the examiner maintains that Rees meets the limitations in question.

Conclusion

5. This is a continuation of applicant's earlier Application No. 10/604,182. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

/Agustin Bello/

Primary Examiner, Art Unit 2613